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MACROSTRUCTURAL DISTRIBUTION OF THE DIVERSE-SPECIALIZED TRAINING TOOLS FOR CLASSIC MOUNTAIN RUNNING IN A MODEL OF PREPARATION FOR "UP AND DOWN HILL" VARIANT

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(Original scientific paper)

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Abstract

The diverse-specialized training tools are an irrevocable part of the training program of mountain runners. Those tools are used for the development of the sub-factors from the first level „Specific endurance" and „Specific speed". The research aims to establish a basic model of the diverse-specialized training tools volume, by weeks in the macrostructure for training aimed at classical mountain running in variant - "Up and Downhill". Methods: a) research of the weekly volume of the training tools within the framework of the separate mezo-cycles in the macrostructure and b) variation analysis of the data received from the training tools explored.

Key words: *mountain running, trail running, off-road running, achievement factors, specific training tools, annual periodization*

Introduction

In the methodic literature concerning the preparation for mountain running there is a wide variety of training means and methods that are recommended for the training of the athletes in these events (Zavialov, & Konovalov, 2014). According to us one of the ways to create an order in this diversity is the training methods to be interconnected with the factors that predefine the result in mountain running. Mountain running is a fast developing mass sport, with so many variations and formats that it is difficult to be listed. However, as part of the athletics mountain running disciplines have clear classification, which defines the technical parameters of every discipline. In many regions of the world where there are no stadiums, for adolescents mountain running is their first meeting with athletics. This is a sport among the pure mountain nature, accessible to all, for which no special equipment is needed. Mountain running is a sport for endurance, practised in crossed terrenes, off-road, and far from the city and the stadiums (Bachvarov, 1982; Bachvarov, 2007; Belotti, 2010). The sport-competitive activity in mountain running requires the use of diverse training means in the preparation. Each of the training means is aimed at the development of a concrete factor of sports achievement (Figure 1). The current study is focused on the use of diverse-specialized training tools. Diverse-specialized tools are close to the racing appearance, but during their performance, from the methodology task point of view, the temp, amplitude, accent, acceleration, and effort of the movement can be changed. These runs are done in relieved and aggravated conditions, with their goal being to enhance the mechanisms of securing and managing the motor activity during the performance. Within the training of mountain runners diverse-specialized training tools are used for the development of the sub-factors from the first level – "Specific endurance" and "Specific speed". These are racings in crossed or mountain terrain resembling the racing conditions, but smaller denivelation. For "specific endurance" are used running with racing or lower intensity, close to the anaerobic threshold. For "Specific speed" the load is significantly higher because of the racing intensity – in an aerobic-anaerobic (mixed) regimen.

The purpose of the research is to define the principal annual model of the distribution of the volume of the diverse-specialized training tools per week in preparation for variation of racing "downhill and uphill"

in classic mountain running, where the main racing is within 39th week from the macrocycle.
The model of achievement in mountain running, established in a previous study, is shown in Figure 1. (Dematteis, 2011).

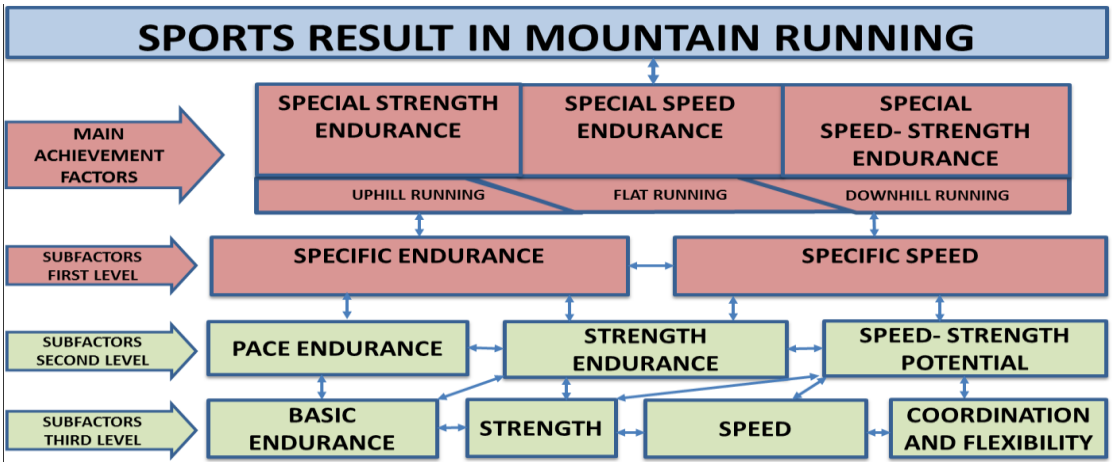

Figure 1. Model of the sports result in mountain running

The diverse-specialized training tools for the development of sub-factors from the first level are shown in Table 1. (Gasperi, 2007).

Table 1. Diverse-specialized tools for the development of the first level sub-factors, the bioenergetic regime and the conditions under which they are performed**.**

SUBFACTORS FIRST LEVEL	BIOENERGY REGIME	SPECIAL TRAINING TOOLS	TERMS OF PERFORMANCE
SPECIFIC ENDURANCE	3.Aerobic-anaerobic regime 2.Aerobic regime	1. Control racing running 2. Paced extensive (interval) running 3. Long variable running (Fartlek) 4. Intensive long running	10. Crossed or mountainous terrain similar to the racing conditions
	2. Aerobic regime	5. Aerobic developmental running 6. Aerobic building running	
SPECIFIC SPEED	3. Aerobic-anaerobic regime	7. Over again running 8. Interval running	

Methods

The research study objectives

1. Defining the volume of the diverse-specialized training tools in the macrostructure of the preparation and the application of those tools according to sub-factors of achievement.
2. Analysis of the distribution of diverse-specialized training tools per week in the macrostructure

The object of the research is the training and sport-racing activity in mountain running and **subject** diverse-specialized training tools, used in the preparation of mountain runners. **The scope** of the research is the 29 training programs of mountain runners.

The **methodology** of the research includes:

1. Analysis of the scientific-methodology literature for long running and mountain running.
2. Research of the weekly volume of the training tools in the frame of the separate mesocycles in the macrostructure of the training programs of the runners.
3. Variation analysis of the data for training tools in the macrostructure.

One part of the researched literature sources are looking at the problems of the specialized diversity of the training tools (Harding, 2014; Kisyov, 2022), and other parts are considering the specific of the racing courses in mountain running (Kisyov, 2019; Kisyov, 2020) and training methodology (Zavialov, 2009; Zavialov, 2010; Zavialov, 2012; Kisyov, 2013; Kisyov, 2014; Kisyov, 2019; Kisyov, 2020; Manzi, 2020; Slavchev, & Kisyov, 2016; Slavcehv, & Kisyov, Slavchev, et al. 2017; Zavialov, & Konovalov, 2014). A total of 29 training schedules of highly qualified racers have been reviewed.

Results

In Table 2 are presented the average values of the weekly volume distance and denivelation of the diverse-specialized training tools in the researched training programs.

Table 2. Diverse-specialized training tools

Weeks	SPECIALIZED TRAINING TOOLS FOR THE DEVELOPMENT OF FIRST-LEVEL SUBFACTORS					
	Specific endurance			Specific speed		
	Distance in kilometers	Ascent in meters	Descent in meters	Distance in kilometers	Ascent in meters	Descent in meters
1	0	0	0	0	0	0
2	0	0	0	1	90	10
3	1	10	10	1	80	20
4	1	20	20	1	70	30
5	2	30	20	2	140	60
6	1	20	10	2	140	60
7	1	10	10	2	120	80
8	2	30	20	1	60	40
9	1	10	10	1	60	40
10	1	20	10	0	0	0
11	2	30	20	2	130	70
12	1	20	10	3	170	130
13	1	10	10	2	110	90
14	2	20	20	2	120	80
15	2	30	20	4	210	190
16	3	40	30	4	200	200
17	1	10	10	2	100	100
18	2	20	20	2	100	100
19	1	10	10	2	100	100
20	1	10	10	0	0	0
21	1	10	10	0	0	0
22	1	10	10	2	100	100
23	2	30	20	2	100	100
24	6	80	70	3	150	150
25	14	170	170	2	100	100
26	16	180	180	3	150	150
27	27	350	350	2	100	100
28	16	170	170	2	100	100
29	25	350	320	3	150	150
30	27	360	330	3	150	150
31	22	300	240	1	50	50
32	0	0	0	0	0	0
33	15	120	120	1	50	50
34	19	160	160	2	100	100
35	17	160	150	1	50	50
36	0	0	0	0	0	0
37	10	130	110	1	50	50
38	14	150	130	1	50	50
39	0	0	0	0	0	0
40	11	170	140	1	50	50
41	5	60	50	0	0	0
42	4	50	40	1	50	50
43	5	60	60	0	0	0
44	3	40	40	1	50	50
45	4	50	40	0	0	0
46	2	30	20	0	0	0
47	1	20	10	0	0	0
48	1	20	10	0	0	0
49	6	90	80	1	50	50
50	5	70	70	0	0	0
51	4	50	50	1	50	50
52	3	40	40	0	0	0
Total	**312**	**3830**	**3460**	**68**	**3700**	**3100**

Analysis of the annual volume of the diverse-specialized tools developing the sub-factors of achievement from I^{-st} level

The specific tools– running in rugged or mountain terrain imitating the racing conditions are divided in two directions. The first direction is directed to the development of the sub-factor “specific endurance

”, where the annual volume in distance is 312 km, which is 82% of the total volume of specialized tools. The second direction of tools is directed to the development of the sub-factor “specific speed”, which annual volume is 68 km. The ratio in the distance between the tools for “specific endurance” и “specific speed” is 5:1 (shown in Figure 2).

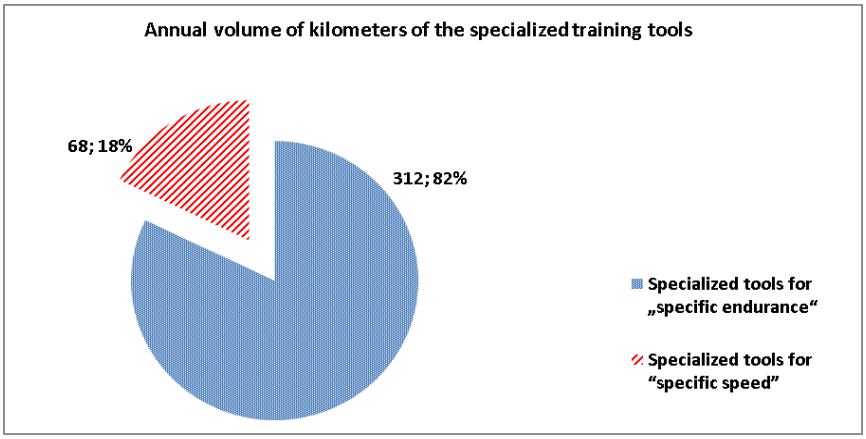

Figure 2. Annual volume of kilometres of the specialized training tools according to their focus on the sub-factors from the first level.

The total positive denivelation accumulated for one year in the specialized tools for sub-factors from the first level is 7530 meters, with 3830 m for the “specific endurance”, and 3700 m for “specific speed ” (shown in Fig.3), which makes a ratio of 51% / 49%.

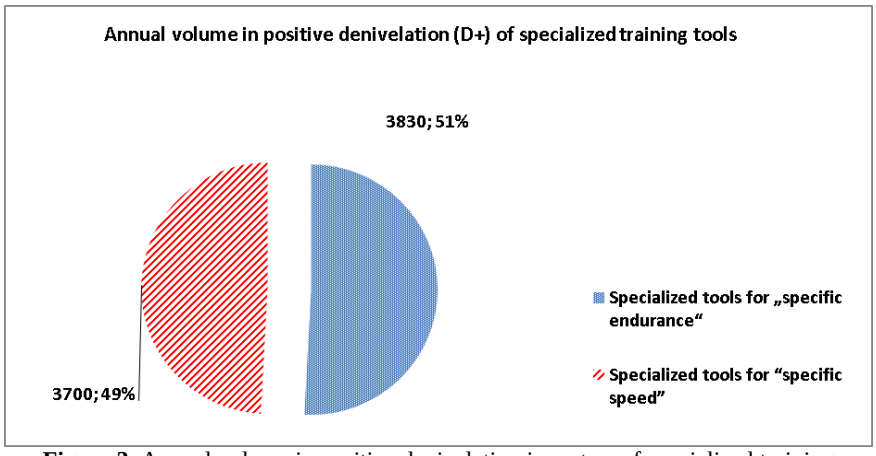

Figure 3. Annual volume in positive denivelation in meters of specialized training tools according to their focus on the sub-factors from the first level.

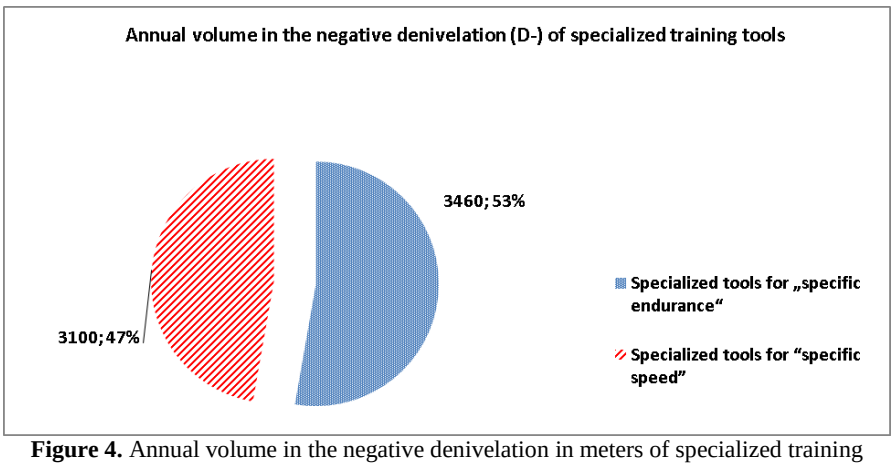

Figure 4. Annual volume in the negative denivelation in meters of specialized training tools according to their focus on the sub-factors from the first level.

The total negative denivelation accumulated for one year in the specialized tools for sub-factors from the first level is 6560 meters, with 4360 m for „specific endurance“, and 3100 m for „specific speed“ e (shown in Figure 4), which makes a ratio of 53% / 47%.

Analysis of the distribution of the volume of diverse-specialized tools for the development of the sub-factors of achievement from I-st level by weeks in the macrocycle

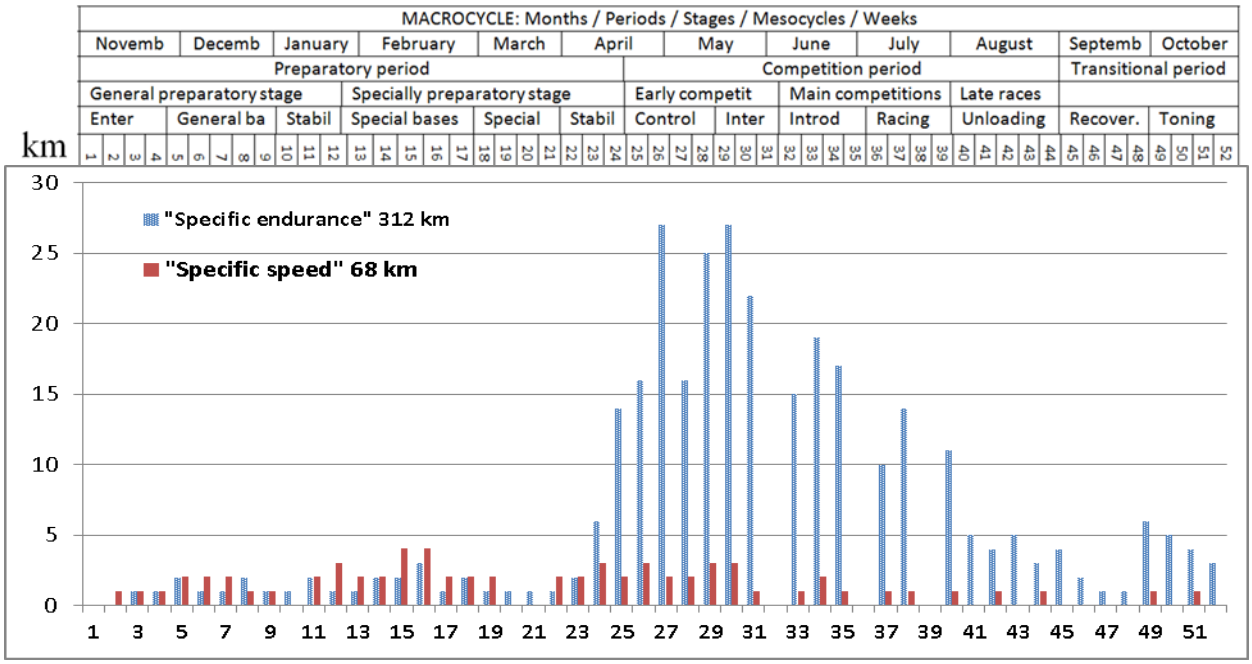

Figure 5. In the frame of macrocycle on the abscissa is shown the weekly distribution of the kilometres of diverse-specialized tools for the development of the sub-factors from the first level.

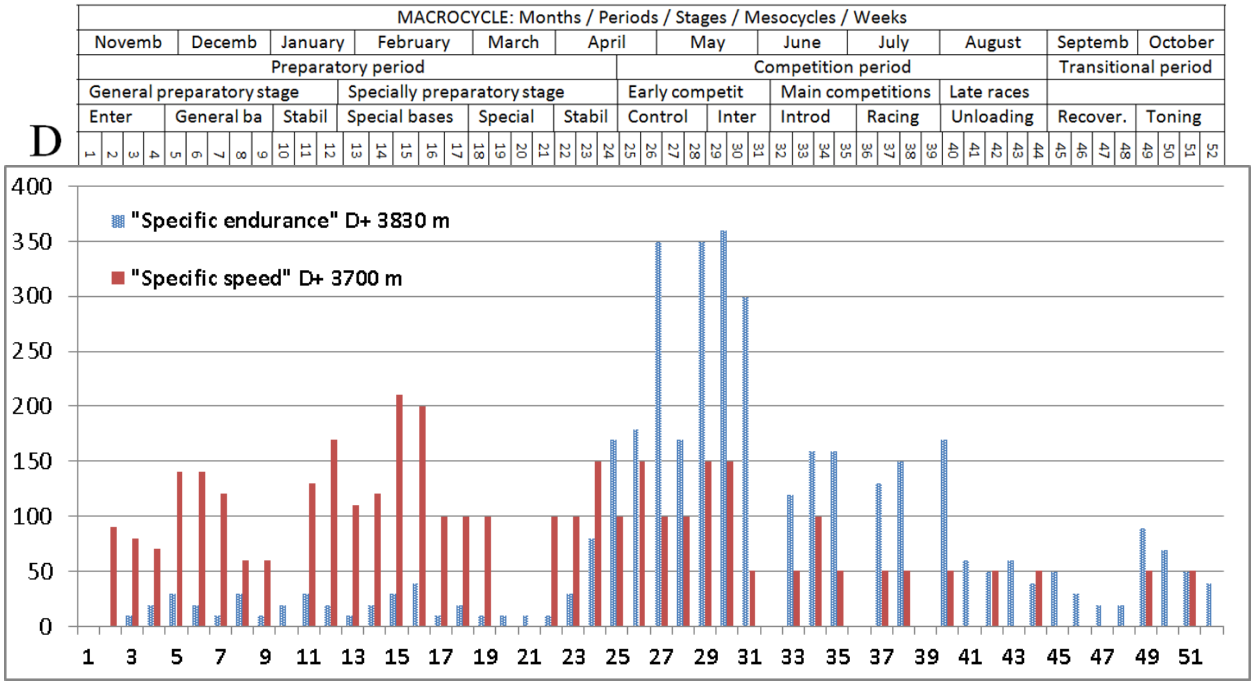

Figure 6. In the frame of macrocycle on the abscissa is shown the weekly distribution of meters positive denivelation of diverse-specialized tools for the development of sub-factors from the first level.

Figure 5 shows how the training tools for the development of "specific endurance" are used mainly in the racing period, and their weekly volume very often varies between 15 and 25 км. In the transitory and the preparatory period their usage is minimal – around 5 км weekly. The tools of the other factor from the first level – "specific speed" have relatively evenly distributed – about 2-3 kilometres weekly during the preparatory period and the first half of the racing period. After that in the stage of the late racing and in the transitory period their usage significantly decreases.

The denivelation of diverse-specialized tools for the development of sub-factors from the first level has minimal values at the beginning of the preparatory stage and gradually increases reaching the highest values in the stage of early racing. During all stages of the preparation, the positive denivelation is a bit more than the negative. There is an exception only in the first half of the general preparatory stage, where the positive denivelation for the factor "specific speed" is more than the negative (shown in Figures 6 and 7).

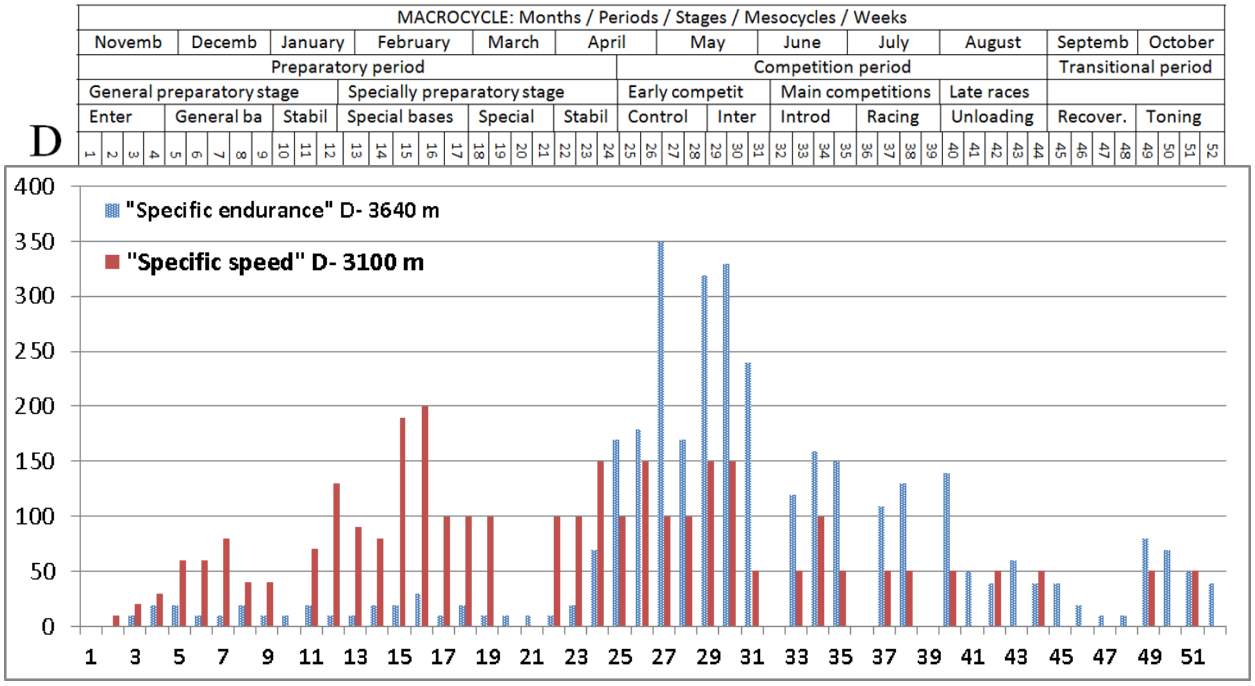

Figure 7. In the frame of macrocycle on the abscissa is shown the weekly distribution of meters negative denivelation of diverse-specialized tools for the development of sub-factors from the first level.

Conclusion

1. The training tools developing sub-factor "specific endurance" are the supporting element with first-grade importance for the realisation of the specific preparation in the racing period.
2. The training tools for the development of the sub-factor "specific speed" are present during almost all stages of the preparation, with the highest values of the distance reached during the special-preparatory stage and the stage of the early competitions.
3. The training tools for the development of the sub-factor "specific speed" are present during almost all stages of the preparation, with the highest values of the distance reached during the special-preparatory stage and the stage of the early competitions.
4. During all stages of the preparation, the positive denivelation is a bit more than the negative. There is an exception only in the first half of the general preparatory stage, where the positive denivelation for the factor "specific speed" is more than the negative.

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